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THE INVOLVEMENT OF NGOS IN THE DEVELOPMENT OF FOOD-PROCESSING AND AGRO-INDUSTRIES IN AFRICA**

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1.0 INTRODUCTION

Agrobased industries interact with the food chain which ranges from agricultural production, processing to distribution and marketing; along with related subunits such as storage, transport, socioeconomic aspects and institutional infrastructure.

This paper provides an overall assessment of the development of agro-industry in Africa with emphasis on the food-processing industry. It aims at identifying the sub-sectors and areas in need of cooperation particularly from Africa and international nongovernmental organizations (NGOs). It covers recent growth of the agroindustry; present status and involvement of NGOs focusing on causes affecting development, problems and constraints; priority areas for development and activities of NGOs and their specific setbacks. Also considered are environmental aspects and development of human resources. Interinstitutional cooperation is essential in adequate integrated development of the agroindustrial sector, so special attention is given to this notion. Recommendations covering the major aspects of agro-industries, to enchance development through integration and cooperation between relevant institutions especially NGOs are given in the texts as the topic develops.

Serious consideration of integrated agro-industrial development is timely to combat the big food problem facing Africa now mainly due to drought in the Sahel zone in West Africa, Ethiopia, Sudan, parts of Eastern and Southern Africa (1). Thousands of people have died or are starving. The drought has brought about unexpected food scarcity, untold misery, economical hardships and severe malnutrition especially among vulnerable groups of the population. The 1974 Sahel drought claimed over 300,000 lives, while higher numbers have been reported for Ethiopia in 1984 (2). The drought has caused much migration of people and animals in search of food. Most of these perished enroute and those who made it have created a big refugee problem especially in the Sudan and the SADDC countries. Worst hit was Mozambique with 100,000 reported drought related deaths.

The situation is worsened by the rapid growth of the agricultural population averaging 2.6% per annum over most of developing Africa countries (3). The seriousness of the situation requires mobilization of all available resources, hence the need to integrate rellevant operations of government and nongovernmental organizations. The term NGO represents a broad, varied and somewhat confused universe (4). For the purpose of this paper, the term denotes organizations which are different from the state apparatus, are often organized voluntarily and endeavour to achieve various goals.

Such organizations include agricultural production and food industry organizations, chambers of commerce and industry, cooperatives and small and medium scale organizations; Research and Development (R&D) Institutes and Universities. In some countries, even financial institutions which are not state run such as banks, are included.

2.0 BACKGROUND INFORMATION

A brief analysis of the agro-industry in Africa (developing) indicates that it is characterised by a food production subsector which lags behing population growth, while processing especially in rural areas is dominated by traditional technologies. Relevant processing establishements have not integrated well, while emphasis has been placed on cash crops rather than cereals, fruit and vegetables. This section explores the growth of the agroindustry in Developing African Countries.

According to the World Bank Development Report (1982) the GDP dropped from 3.8% in 1960-73 to a low 0.4% in 1980, but rose to only 2% in 1981 for most low income African countries (5). According to the same report projection up to 1990 indicates a negative change of GNP per capita of 0.1%.

Growth of agricultural and food output in developing African countries is given in Table 1.

Table 1: Growth of Agricultural and Food Output in Africa Developping Countries (%)

Agricultural Output				Food Output			
Total		Per capita		Total		Per capita	
1960-70	70-80	60-70	70-80	60-70	70-80	60-70	70-80
2.1	1.3	0.2	1.4	2.6	1.6	0.1	-1.1

Source: World Development Report 1982.
Washington DC. Table 5.1

From table one agricultural output showed a decline from 2.7 - 9.0 to 1.3% from 1960-1970 to 1970-1980 respectively, lagging behind population growth which averaged about 2.6% (3). Similarly food output per capita declined from 2.6% to -1.1% from 1960 to 1980, implying a big food deficit.

The yearbook of Inudstrial Statistics (6) indicates that the food processing industry in African developing countries was dominated by cereal processing producing 11.2 million tons of products in 1980. Sugar and sugar products ranked second with 6.3 milion tons, followed by animal products and fruit and vegetables.

The overall average growth rates of real manufacturing value added originating from the food processing and beverages sectors in developing African countries dropped from 5.9% to 0.2% from 1965 to 1975. Beverages rose from 6.7 to 10.8% and total manufacture fell from 7.5 to 5.1% according to the limited available data. Up to 1981 manufacturing growth rates in low income African developing countries had registered little or no improvement in agro-industrial growth (7).

Between 1970 and 1980, agroindustrial structural changes in developing countreis varied according to country and commodity items. Overall, the food processing sector was much higher than beverages. Countries which registered small to moderate increments in food and beverage processing were Algeria, Kenya, Morocco, Mozambique, Senegal Malawi and Sudan. In most of the other countries growth rates of agroindustrial manufacture value added declined (7). According to the UNIDO data base (8) the number of establishments in the food processing and beverages industries in African developing countries between 1970 and 1980, was not adequately documented. The data is incomplete but shows the total number of establishments in food processing were about 6000 units (limited data) in 1970, but had decreased in some countries by 1980 due to closures brought about by various reasons.

Employment in the food processing and beverages industrial sector stood at 321 thousand and 52 thousand respectively by 1970 for all African Development countries. The figures are small in comparison with other industries, so there is much room for development. Up to 1980, changes were not uniform but the overall growth was small.

Production of raw materials Crops and livestock in developing market economy countries are summarized in Tables 2 and 3.

Table 2: Production of Major Food Crops in Developing Economy African Countries (Million Metric Tons).

	1974 - 76	1981	1982
Cereals (Total)	46.7	48.2	49.7
Wheat	5.1	4.5	5.3
Rice Paddy	5.5	6.3	6.5
Sorghum	7.6	8.3	8.4
Millet	8.4	9.3	9.4
Maize	14.9	14.8	14.2
Pulses (Total)	4.8	4.9	5.2
Roots & Tubers	74.7	81.7	84.1
Vegetables & Melon (Total)	0.5	0.4	0.3
Sugar cane	26.8	36.4	39.1

Source: FAO Production Year Book Vol. 36 - 1982. Crops Tables (FAO 1983).

From Table 2, it is evident that cereal (total) production only increased by 6% between 1974-76 and 1982. Wheat, rice, sorghum and millets all increased but maize declined. Roots and tubers registered the highest in terms of wet weight production and also increased substantially over the period.

Table 3: Summary of Livestock Numbers (African Developing Market Economies) - Million head

	Cattle	Pigs	Sheep	Goats	Chickens
1974 - 76	126.2	6.9	114.0	116.9	394.0
1981	137.6	8.6	126.6	128.3	502.8
1982	139.4	9.0	128.6	130.6	525.7

Source: FAO Production Year Book Vol. 36 - 1982. Livestock Tables. (FAO 1983)

From Table 3: over the period, the cattle population increased by 11%, pigs by 30%, sheep by 13%, goats by 12% and chicken by 33%.

This trend indicates an over all increase in livestock based raw material supply.

2.1 Non-Governmental Organizations (NGOs)

Non-governmental organizations (NGOs) by formal definition are rather poorly developed in African developing countries compared to other continents (9). The history of NGOs in Africa is also not well documented but varies much. The strongest NGOs are those which grew from traditonal community organizations and selfhelp groups which form the backbone of African brotherhood and extended family cooperation. Often the communities live in villages and own land around which agro - industrial operations such as production, storagle, traditional processing, marketing and distribution are organized. In the case of Tanzania, these groups have been officially recognized to form the base of the Ujamaa Villages which accommodate about 80% of the total population.

Church-based NGOs evolved from preindependence days whereby European and American churches started establishements and societies to provide for the material well being of their followers. Presently in Africa, many such NGOs are based around various churches and denominations. Most are indigenous and indipendent of the mother churches, but some are still organized from abroad.

African NGOs linked to overseas voluntary organizations (nondenominational) were often started as offshoots of international voluntary organizations. The most prominent, existing practically in all African countries are the National Freedom from Hunger Committees/Action for Development (FFHC/AD). These groups are heavily engaged in food production and income generating operations to stave off hunger.

In some African countries there exists NGOs which are sponsored by national governments. As big success is the cooperative movement dealing with all aspects of agro industries in Africa, for example production sprocessing and marketing of cash crops like coffee and cotton in Tanzania.

In retrospect, the limited information available, indicates that African NGOs involved in agroindustrial operations have succeeded in intervening where need was felt most, creating awareness among communities and mobilizing resources for development against really tough odds.

In most African countries universities are not strictly NGOs but they enjoy some amount of independence from the central government machinery. They play a leading role in training personel for agro-industries and relevant Research and Development institutes. Most developing countries have at least a university or university college.

The following selected countries have university institutions which give agricultural training or food and nutrition. The list also includes research organizations specializing in agroindustries.

Table 4. Countries with Agro-Industrial Universities and Reserch Institutions.

Country	No. of Institutions
Algeria	3
Benin	1
Chad	1
Congo (Brazaville)	1
Egypt	4
Gabon	1
Ghana	2
Guinea	1
Ivory Coast	1
Kenya	2
Mali	2
Nigeria	4
Senegal	3
Sudan	3
Tunisia	3
Zambia	1
Zimbabwe	1
Tanzania	4
Uganda	1

Source: - UNIDO (1982) - "Information sources on Grain Processing and Storage". UNIDO. Vienna.

Another active group of NGOs is made up of national chambers of commerce and industry. These have t cities in almost all African countries. They concentrate on industrial processing, marketing and distribution and play a leading role in agro-industries.

Food industry organizations are not very common but Food Science and Technology associations have been formed in Kenya, Nigeria, Ghana and Egypt. The Food Manufacturers Association in Tanzania

also serves the same purpose in food industry development (10.11)

The rotary club international has members in most African developing countries. Their activities are many and varied and include support to many small projects and activities related to agro-industries.

3.0 PRESENT STATUS AND INVOLVEMENT OF NGOs

3.1.0 Major Causes Effecting the Development of Agro-industry, Particularly Food Processing Industries.

Causes affecting agro-industry development could be grouped into internal and external causes. Some are of a political nature and others are agriculturally allied or human resource based.

3.1.1 Causes of Political Nature

The analysis presented here is based on experiences from Ethiopia, Kenya, Ghana, Nigeria, Senegal, Siera Leone, Zimbabwe, Angola, Uganda and Tanzania. These countries could be regarded as representative of most African developing countries (12).

3.1.2 The degree of political maturity

Political maturity and ability to lay sound policies, create stability and inspire confidence are important factors. Some of the recently independent states are in a state of transition, plagued with instability, coups and inadequate development strategy. Internal strife as reported in Ethiopia, Uganda, Chad, Sudan, Mozambique and Angola, among others, affect the food system including processing, and manpower.

3.1.3 General Policies and Food and Nutrition Policies as laid down by national governments affect the pattern of agro-industries. Pre-independence agricuiltural patterns with emphasis on cash crops to supply mainly overseas markets still dominate, and this adversely affect African agroindustrial growth, related to staple foods.

3.1.4 National Plans and Development Strategy.

Most African Countries have annual and Five Year Development Plans which dictate the course of action. These plans determine the degree of self sufficiency, growth in different sectors, investment deployment and degree of integration in different programmes and projects.

3.1.5 Food and Agriculture Related Causes.

National food and agricultural policies determine the pattern of agricultural products which provide raw materials and the base for agroindustry development. Agronomic and postharvest status especially storage, processing and marketing patterns are

important subunits. Pricing policies often determine producers incentive and often influence production and marketing at both local and international level.

3.1.6 Causes Related to Processing

The supply and quality of raw materials affect capacity utilization of installed plants, implying the need to match processing needs to agricultural production.

The degree of technology advance and capability in African Developing Countries largely influence agroindustry growth. Presently, the sector depends heavily on imported technology, which is very expensive and under patent controls. The low level of indigenous technology and ability to fabricate processing equipment using locally available resources even under license, undermines efforts to develop agroindustries in African Developing Countries. The above mentioned coupled with the level of back-up services provided by local and overseas firms and institutions, along with the state of Research and Development Capability and utilization, strongly influence agroindustrial growth.

Naturally, the development level of the marketing and distribution sector which provides an outlet for processed goods, is a very important subsector in agro-industrial development.

3.1.7 Manpower, Management and Administrative adequacy are important factors Self sufficiency in skilled manpower in the food processing industry, the level of on the job traininy or apprenticeship, proper allocation and utilization of manpower; management and administration of human resources, all influence development.

3.1.8 Finance and Investment.

Finance and investment capability and potential are the core of any agroindustry for it affects all subsystems from production to consumption. Here government and non governmental resource deployment are vital instruments for integrated development.

3.1.9 External Causes

These are many but the major ones influencing the growth of integrated agro-industries are related to trade, multinational corporations and monopoly of advanced technology.

Tariffs limit access to markets outside developing countries since the tarrifs in developed countries are high and terms and conditions set, are biased towards strangling development in young developing countries. Closely allied to this are the international pricing policies which do not favour developing African countries as exemplified by cocoa, cofee and cotton which have been experiencing severe price fluctuations

Transnational corporations operating in Africa concentrating on staples for local use, cash crops, and exotic export crops such as fruits and vegetables (13) have the high level of technology, manpower, management skills and financial capability to affect the development of agroindustry in Africa. They are also highly involved in cereal milling, bakery products, vegetable oils and livestock products, all of which affect the core of the nutritional status of indigenous popuations. These corporations along with overseas government and nongovernmental institutions have the financial and technological capability that could strongly influence the growth and direction of agroindustries in Africa.

3.2.0 GENERAL STATUS OF FOOD INDUSTRIAL PLANTS IN AFRICA

This section concentrates on the major types of plants installed, main problems being confronted, utilization of plants capacities and plants in need of rehabilitation.

The major types of plants in use in Africa, follows the pattern of agricultural production. Cereal milling equipment dominates, followed by vegetable oil extraction, fruit and vegetable processing machinery, animal products processing and beverage manufacture.

3.2.1 Problems

Plants in use in most African developing countries face many problems which would not easily occur in developed countries. Some of the equipment was installed during preindependence days and due to the recent and current poor state of the economy, they have not been replaced by current advanced plants that have since been developed in stride with advances made in technology else where in the world. The equipment in use is therefore obsolete in most plants that are in operation.

By the same argument it is obvious that the techniques, and handling of materials in use in most plants is outdated and rife with ineffeciency and low output. For example oil extraction by the old expeller would hardly compare with modern solvent extraction technology.

The supply of spare parts maintenance and backup services are vital aspects in any plant, but in the case of the African situation, where obsolete equipment is in use, these aspects are lacking or are minimal. Since the equipment is so old, the original manufactures have either wound up or have just stopped producing old models in favour of modern, more advanced and efficient plants.

In some cases, even where the spares and backup services are available, the economic recession existing now and availability of resources in the form of foreign exchange, make foreign purchases

virtually impossible. As a result plants just limp along with whatever is possible. The absence of adequate local fabrication facilities for spares parts in most African countries makes the situation worse.

Most plants in existance especially the older ones are run and managed by personnel that could do with better training and skills. As a result handling, servicing and output tend to be poor.

3.2.2 Utilization Percentage of Plant Capacities

Data on capacity installed and utilization in African developing countries is very scantly so only a sketchy description is given here. The level of capacity and utilization are affected by many technical and economic factors. Technically, the unit operations involved, and their operational capacity and effeciency determine the overall performance. On the other hand, economic factors such as supply and demand, prices and world trade trends affect total production to satisfy consumers. It is correctly reported that capacity utilization in developing countries is much lower than developed ones (14).

Tne vegetable oil and fats industry is quoted to indicate the seriousness of the situation and it could also be assumed that the situation is not very different in most other plants in operation (15). It is estimated that capacity utilizatilization in the vegetable oils and fats industry in Africa average 32% while for developed countries it ranges between 65% - 85%.

Differences among developing African countries were wide in surplus and deficit areas. In surplus countries, in 1982 crushing capacity utilization varied from 15% for Zaire, 27% for the Ivory Coast 38% for Senegal and 62% for the Sudan. In deficit areas, Niger had 18% Tanzania 21% while Morocco used 70% of her crushing capacity. It would appear that lack of proper integration between existing crushing plants and the raw material production on one hand and between domestic and export markets on the other was a major cause.

3.2.3 Plants in Need of Rehabilitation

From the afore mentioned, it would appear that the existing plants in the food processing sector from cereal milling, animal products as well as fruit and vegetable processing require rehabilitation, complete overhaul or full replacement with modern plants so as to increase capacity utilization. This step would raise output and yield numerous economic returns.

3.3.0 PRIORITY FOOD PROCESSING INDUSTRIES IN AFRICA

This section deals with food industries which should be given priority, their potential and limitations. Priority consideration is based on industries where the greatest potential for success exists, such as those which could use locally available raw

materials and could engage a good number of human resources in its integrated development.

Another consideration is that the priority industry should address existing problems such as insufficient food and malnutrition as well as rural and urban needs. Proper integration into existing infrasturcture for overall development is also very important especially where output might yield economic returns, local and foreign exchange. Bearing the above mentioned facts in mind, the following industries are considered as priority ones:

3.3.1 Cereal Processing

The majority of the African population subsists on cereals such as maize, rice and wheat. In dry areas prone to drought as is the current situation, sorghum and millets are the life saving food grains, the only hope for millions in the Sahel Zone and parts of Eastern and Southern Africa.

The coarse grains mainly maize, sorghum and millets are usually milled whole or decorticated into flour or grits, but unlike wheat, a variety of flour products are not produced. The technologies in use especially in rural areas which harbour 80 - 90% of the total population are largely traditional using the old mortar and pestle or grinding stone. Recently fuel or electricity powered mills have been introduced to reduce the druggery of grain processing which is mainly done by women. In urban centres roller mills for wheat and hammer mills are in existance, often run by National Milling Corporations as is the case in Ethiopia, Kenya, Uganda and Tanzania, mainly to cater for the urban population.

The flour is usually eaten as porridge and in the case of wheat made into a variety of bakery products. This sector integrates well in that the by products are made into animal feeds and the bran could produce oil.

Cereal Processing has a high potential. The production of raw materials is virtually guaranteed for it forms the bulk of agricultural activity. The average yields per hectare are currently relatively low but there is ample room to raise yields through improved crop husbandry and better seed. There is ample arable land which is currently under utilized and since the continent is endowed with much fresh water in lakes and rivers, the potential for irrigation is very high as demonstrated by the large irrigation schemes in the Sudan and Egypt.

The processing technology and plants for most cereals is well known and the machines are easy to run and maintain. There is a big ready market in rural and urban areas as the population is growing. The potential for major types of convenience foods such as bakery products like bread, cakes, flakes and chapatis is yet to be fully tapped.

However there are some limitations which can be surmounted. Pests limits crop production over most of Africa, while drought has persisted over the last decade severely curtailing cereal stocks and causing famine. The Quelaequelae birds are a plegue to cereal grains over most of Africa.

In the case of sourghums and millets, the milling technology for other cereals is inadequat for medium and large scale processing because of the biological nature of the grain. However, abrasive milling as developed by the International Development Research Centre (IDRC) of Canada or adapted rice dehullers offer promise as already demonstrated in Botswana, the Sudan and Tanzania (16).

3.3.2 Root Crops

Root crops such as sweet potatoes yams and cassava flourish over most of tropical Africa. Cassava has the added advantage of being drought resistant. Production is high and nutritionally it yields the highest calories per hectare compared to other foods. The production arguments advanced for cereals apply here equally well.

Cassava is taken as a model here and bearing in mind what the white potato has achieved in developed countries, cassava has a very big potential in Africa where it has sustained the life of millions for years. Good high yielding varieties have been developed and even high protein varieties exist. The plant is versatile for a variety of uses. Apart from the roots, the leaves are used as a vegetable high in protein, vitamins and minerals. Cassava roots store well in the ground and surpluses in rural areas are shared with livestock indicating its high potential for integration.

A wide range of traditional technologies for processing exist and a variety of products such as flour and fermented products are widely consumed. These just require scaling up through development using available modern techniques and equipment which are already available (17).

However, cassava is limited by the presence of cyanide in some varieties both in the root and the leaf. There are techniques for inactivating the cyanide anyway, even in traditional processing and fermentation. The roots handle poorly and have a limited shelf life.

3.3.3 Vegetable Oils and Fats

A wide variety of oil seed crops are produced all over Africa as the climate is ideal. They all produce oil which is a rich nutritonal, energy source and has wide demand and ready markets locally and overseas. The byproducts such as the seed cake has a wide range in baby food manufacture, protein extraction and animal feed manufacture. The vegetable oil industry therefore has a big potential for integration.

It would appear that cotton seed production has a big potential as the industry is already established from production to processing. However the presence of gossypal in some varieties is a limiting factor but this has already been tackled by the introduction of glandless, gossypal free varieties.

Groundnut production is well established in West Africa with more room for expansion. It yields high quality oil and excellent cake, but the development of the toxin, afflatoxin under high moisture conditions poses some limitation which can also be overcome by careful handling or heat treatment.

Palm oil production is well established in West Africa and is slowly gaining ground in East Africa. Coconuts flourish well along or near the tropical coast. Other oil sources include sybeans, sunflower and simsim all of which do well over tropical Africa. They have a high potential in the agricultural sector, are highly labour intensive and would integrate well in rural industrial complexes.

These oil plants are limited by agronomic factors under subsistance production but these could also be overcome. Since they are labour intensive where migration from the country to towns has already occured, the supply of labour could be a limiting factor.

3.3.4 Fruits and Vegetables

Fruit and vegetable production in Africa is possible all over, where the climate is suitable. A wide variety of these crops expecially choice quality exotic fruits and citrus types do wel as exemplified by plantations in south and north Africa.

The vast forest areas that cover tropical Africa are all potential areas for plantation fruits and vegetables and this belt is yet to be developed substantially. There is a big demand for these crops, the local and export markets are yet to be fully exploited. The technology and plants for processing these at grass root level and industry exists and are readily available. This sector offers much room for intensive labour for providing income as well as integration into by products processing and uses.

Some limits exist now. The production of raw materials is hardly linked to processing needs and capability so this aspect require priority consideration during integrated development. The crops are often highly perishable and require quick handling and processing. The situation is worsened by poor transport infrastructure, the need for cold storage handling and inadequate marketing and distribution network.

3.3.5 Animal Products Industry

This sector covers livestock products such as meat, milk and milk products, poultry and fish. Africa is endowed with a big

population of cattle, sheep, goats, pigs and poultry, while her waters abound with much fish. The potential for developing this sector is very high in that there is ample land, rivers and lakes, while improved breeds developed in collaboration with developed countries are already available, just awaiting wider use especially in rural areas.

However serious limitations which exist must be overcome. Deseases and health care leave much to be desired. Tsetse flies infest most of Tropical Africa, severely limiting areas for livestock production. The supply of animal feeds is limited and severely curtail the performance of improved breeds. Animal products are highly perishable and like fruits and vegetable, require cold storage facilities, rapid handling and distribution.

3.3.6 Animal Feeds Production

From the afore mentioned, integration with the other crop sectors necessitates the production of animal feeds. The demand and markets exist, but in a continent prone to hunger and famine, the competition between man and animal must be kept to a minimum, in favour of human beings especially in cereals. The current high animal population with limited supply of feeds other than grass, creates a ready outlet for animal feeds.

However adverse weather conditions leading to drought, pose a limitation to raw material production. High transport costs from the farm to the processing facility and back to the farm raise the final price to the consumer. The supply of imported inputs such as vitamins, minerals and medicines is another limitation since these are often imported using foreign exchange which is often meagre.

3.4.0. MAJOR ACTIVITIES UNDERTAKEN BY AFRICAN AND NON-AFRICAN NGOs IN SUPPORT OF AGRO-INDUSTRIES (INCLUDING FOOD PROCESSING).

Most NGOs, African and non-African, concentrate on three sectors namely:- rural life improvement (mainly agricultural subsistance crops for cash and food); education (children and adults) and health (nutrition and medicare) (18). These activities integrate well with the development of a healthy agro-industrial sector.

Rural life improvement involves NGOs in social mobilization of the community which often includes creation of awareness of social rights, economic potential, use of locally available resources and infrastructure, problem definition and participation in drawing up strateges for solutions. As a result, often NGOs provide a link between the community and government.

3.4.1 Production and Utilization of Materials for Agro-industries

Agricultural production which is the backbone for rural life and the base for agro-industries, embodies much activity by local and foreign NGOs. This is illustrated by projects undertaken by the Freedom From Hunger Committees/Action for Developmnt in many African countries, coordinated from FAO in Rome. These include some production of cash crops and food crops like cereals, legumes, fruits and vegetables under irrigation. Raising small stock such as poultry, rabbits, pigs and goats and promotion of improved high grade livestock are favoured projects.

The Heifer Project International based in the USA has played a major role in supplying high grade heifers to many African countries which have in turn helped their fellow developing countries.

The cooperative movement in Africa plays a leading role in agro-industries. Most cooperatives are supported by national governments: are involved in procuring credits for their members and safe guard property such as land. They also act as channels for aid to their members.

A close look at African agro-industrial cooperatives shows that they are organized mainly around cash crop as cotton, coffee and cocoa. They are actively engaged in production aspects, storage and processing such as oil extraction, ground and instant coffee and cocoa. Often they do their own marketing and distribution in local and overseas markets. These cooperatives have registered much success in Eastern and Western African countries. However consumer cooperatives handling the provision of essential commodities such as food and clothing for local consumption have not been as successful especially in the post independence era, since these items hardly serve the interests of overseas markets in developed countries.

3.4.2 Aid

Overseas NGOs such as FFHC/AD committees, aid organizations and church groups in developed countries have ample financial resources which are given to the poor of the third world. Scrutiny of such aid indicates that food aid especially in times of disasters like drought and floods dominates. At times such aid stifles local efforts towards self sufficiency and leads to more dependence on foreign help. Often foreign NGOs finance projects which involve agricultural production, storage, processing and consumption and in the process provide short term project management expertise and evaluation. However, more often than not, the support stops as soon as the funds run out, leaving projects unfinished and in suspense in the hands of inadequately equipped local NGOs. In the meantime, aid is hardly neutral so it tends to create dependence and community resented pressure.

NGOs in general link local communities to their overseas financiers and where differences occur, tension builds up all round especially where senstive aid projects fail to live up to expectations after evaluation often demanded by financing NGOs.

3.4.3 Consumer Protection

NGOs sometimes participate in protecting consumers by their involvement in improvement of the quality of life especially in rural areas. Support of fair prices for producers of agricultural raw materials and inputs as well as finished agro-industrial goods such as food, directly stimulate the development of the sector.

3.4.4 Promotion of Technology

Technology utilization and advance are vital in agroindustrial development and both African and non-African NGOs are actively involved. In general in the food processing industry, food industry organizations such as national assiciations of science and technology, chambers of commerce and industry, cooperatives; often link up with research and development institutes and universities with agroindustrial departments to explore and develop new technologies which are then extended and promoted to the relevant users.

Promotion of Intermediate Technology or Appropriate Technology from North NGOs has been successful as reported by the Intermediate Technology Development Group (ITDG) based in London (20). ITDG has not only helped to develop working projects and technologies for rural areas in fields ranging from cheap energy sources to transportation, from water supply to food production, storage and processing; it has also been a guiding star for the appropriate technology movement which numbers more than 1000 groups and units, some of which are NGOs in developing African countries.

3.4.5 Training and Research

African and non-African NGOs play a big role in training and

research related to agro-industrial development. The low level of education and agro-industrial skill in most of rural Africa, provide a ready recepient of advanced education and technological skills from North NGOs which are richly endowed. Major activities involve on the job training in various fields by experienced project expatriate personnel, granting fellowships to study abroad and building local training capability by providing trainers and infrasture.

Universities play a vital role as they have the potential material, human and financial resources and facilities for training and research in agro-industry. However in some African countries, universities are not strictly NGOs as they are sometimes part of the government infrastructure. More often than not, they face highly qualified manpower and the latest technological facilities.

3.4.6 Financig:

Financial NGOs actively engage in project planning, feasibility and implementation, provide credits and loans especially to African NGOs and agroindustrial areas tend to receive priority as they serve community needs and are likely to succeed.

3.5.0 MAIN PROBLEMS AND CONTRAINTS FACED BY NGOs

The general problems and constraints outlined earlier in this paper in the causes affecting the agro-industrial sector in Africa, apply equally to NGOs, so there is no need to reiterate those here. This section therefore concentrates on those which prevent the NGOs from becoming more active in this sector.

3.5.1 Low Success Rates and Frustration occur in some NGOs basically due to the nature of projects involved i.e. those aimed at tackling rural poverty. This field has many parameters and many of the aspects are beyond the control of NGOs, the community and even government.

3.5.2 Cooperatives

Cooperatives face problems and constraints mainly due to the way some were founded, under pressure in pre-independence days to cater for the interests of developed countries often with the encouragement of uninternational agencies which considered such societies as an excellent tool for liberating the less developed countries (19). Cooperatives were therefore formed at random, grouped together lukewarm members who were unconvinced of some of the activities inspite of artificial financial and material support from various interested parties.

Activities such as emphasis on cash crops, do not really answer the needs of the local people which revolve around food, shelter and clothing, so they are often treated half heartedly. The rural poor feel exploited in that returns from heavy toil are low due to low world market commodity prices, heavy government taxation and

syphoning of heavy profits by middlemen and suppliers of finished processed products such as food and clothing items.

At the local level, some cooperatives, though rich, have been run under poor management and even have involved financial misappropriation to the consternation of members.

3.5.3 Limited Resources

African NGOs especially those founded on traditional community norms have poor material, human (trained) and financial resources. Their dependence on foreign or government support at times limits their activities.

3.5.4 Poor Project Preparation and Management

Projects in agroindustry require adequate preparation and management so as to achieve growth and integration into the whole system. These skills are limited in most African NGOs, so activities are adversely affected.

3.5.5 Political Pressure

African politics are still in a state of transition and politics at grassroot level involve traditional and modern government approaches, which are not always compatible. At times, influence from outside the NGOs conflict with their own interests and those of the community. A stable political situation along with acceptable village and national government policies and guidelines are essential for successful integrated growth of agro-industries.

3.5.6 Suspecion by Governments

NGOs with foreign links (which form the majority in Africa) are at times, suspect by national governments as they tend to introduce alien ideology and influence. This may be more pronounced in socialist oriented regemes, tryiny to get away from capitalist domination. A situation like this will inevitably cause some mutual resentment and limit activities undertaken.

The nature of the link up is usually the Community - NGOs - Foreign Funding agencies; so NGOs are literally squeezed in between. The funding agency may even give the impression that it is employed by foreign powers. In some instances NGOs tend to go out of the original objective of giving technical support and engage in class struggle and political ambitions. Obviously activities such as mentioned above negatively affect the success of NGOs.

3.6.0 MAJOR AGRO INDUSTRIAL SUB-SECTORS AND AREAS OF COOPERATION AND SUPPORT BY INTERNATIONAL NGOs

The major agroindustrial subsectors and areas considered for cooperation and support are based on priorities already established elsewhere in this paper. They are based on the

premise that they tackle existing problems and answer community needs, basically food and adequate nutritional status.

3.6.1 Industrialization in General

First and foremost, developing Africa must industrialize like colleagues in developed countries who evolved from humble beginnings, but with obvious shortcuts in acquiring technology. Industrialization based on structures and techniques that are soundly conceived is necessary for developing agro-industries, technological independent economy and guaranteed financial strong position. The agroindustrial sector should be the focus of a network of integrated industrialization. International NGO's could therefore be useful at strategic points in the network identified in collaboration with the local community. The following subsectors offer potential for cooperation and support.

3.6.2 Grain Production and Processing

Cereal grains form the major staple for most African countries, so help to improve agricultural production through better inputs such as machinery, fertilizers, seeds, irrigation facilities and pesticides would go a long way towards tackling the food shortage problem. Developmnt of improved rural storage would curtail the big losses occuring in stored grain, often estimated at 20-30% and save much needed food for the population.

Processing facilities, even simple ones suitable for rural areas or small scale enterprises, such as threshers, decorticators, winnowers, grinding mills and sifters; offer much room for development of agro-industries in Africa.

Legumes are the poor man's meat and provide up to 50% of the protein requirements of some tropical African populations. Support of this subsector along the lines suggested for cereal grains especially with regard to processing to reduce cooking time and remove nutritional inihibitors, would alleviate the protein energy malnutrition probleme (PEM) which affects over 25% of preschool children in developing African countries.

3.6.3 Vegetable Oils and Fats have high potential for improvement and expansion and since oil is high in energy content, wider consumption could decrease energy malnutrition.

3.6.4 Meat

This subsector includes livestock such as cattle, goats, sheep, pigs, rabbits poultry and even wild game which is abundant in Africa and fish. Cooperation and support from production, processing to consumption would answer the needs of many African and overseas interests. This field is within the means of international NGOs.

Uther subsectors offering potential cooperation and support as

indicated in previously dealt with priorities include, fruit and vegetable production, processing and marketing. The animal feeds subsector also offers some promise.

3.6.5 Areas of Coopration and Support

Generally all systems and subsystems in the agroindustrial complex if well integrated offer scope for cooperation or support. The following are priority areas.

3.6.6 Technology Transfer

Technology transfer should answer the needs of the community. It should be appropriate in that it is locally accepted, adaptable and within local resources for sustainance. Logically it should address major constraints from production, processing, to marketing and distribution. Where equipment is concerned, creation of research and development capability to develop and upgrade local technologies, fabrication of machines at local level and manufacture of spare parts, all offer rich ground for cooperation. Since integration is so desirable it would be tempting for foreign NGOs to set up demonstration model units in selected countries for "pilot" training and nucleus for further development.

3.6.7 Training

Literacy rates in rural African countries are low, so for effective technological advance in agroindustries, adult education is a prime factor for development. Functional literacy would be highly desirable. This as well as formal education should address the whole system from production to consumption. Non African NGOs could therefore help training in local environments for better results. Sandwith courses involving LDCs and DCs or fellowships in overseas institutions would also help. Other forms of cooperation would be to create local capability to do training and research/development by training trainers and setting up infrastructures. Study tours in developed countries and within developing countries, exchange visits and organization of symposia and workshops could strongly be supported by international NGOs.

3.6.8 Trade

Most international NGOs cannot be regarded as serious trade partners with African NGOs but trade offers scope for cooperation and support. Foreign NGOs could exert pressure and influence in the North/South dialogue so as to secure a fair deal for the African countries. They could influence pricing policies to ensure better producer prices for African commodities in the world market. They could influence the lowering of trade barriers such as tarrifs and the quota system, thus expanding commodity markets for African countries.

3.7.0 MULTILATERAL COOPERATION BETWEEN UNIDO NGOs AND AMONG NGOs

There are many areas of cooperation between UNIDO and NGOs and between NGOs themselves especially bearing in mind the roles and

objectives as well as problems and constraints being experienced by these organizations, as already outlined in this paper.

UNIDO by the nature of its formation and objectives could cooperate in policy and guidelines formulation. Cooperation in R & D and information collection, dissemination and exchange is an obvious area. In this process UNIDO could identify problems and look for donors, while supporting the effort by relevant consultancies. Briefly UNIDO field cooperation with NGOs and within NGOs could be grouped into the following groups as they interlink.

3.7.1 Transfer of Technology

Areas relevant in the African situation have been dealt with elsewhere in this paper, so only specific aspects are dealt with here. Preparation of feasibility and preinvestment studies for the establishment of integrated food processing industry offers much room for multilateral cooperation. This would reduce the risk of selecting inappropriate technology and financial losses.

Feasibility and Pre-investment studies

This cooperation could be undertaken in the establishment of integrated food processing industries. UNIDO and north NGOs as well as more experienced developing country NGOs could offer their intellectual and technical capabilities to do detailed and objective feasibility analyses of agro-industrial undertakings. Such studies should cover production, processing through marketing and distribution as well as spin off industries in a matrix of integration. The above mentioned could be followed by project formulation and eventual implementation by African NGOs.

3.7.2 Consulting Services

Consulting services within agro-industrial development offer much room for mutual cooperation. They could be in the form of studies on organization, economic, technical, management and marketing as well as several relevant aspects of technology. Desirable services could involve engineering and general contracting for the exportation and launching of industrial turnkey and product in hand projects especially in developing country NGOs interested in integrated development of agro-industries.

3.7.3 Joint Ventures

Joint venture are highly favoured among NGOs as they cover joint production, processing and marketing for mutual benefit. UNIDO could get involved by exposing the range of available opportunities, and providing confidence and technical know how. North NGOs could be shareholders and offer financial collaboration. The establishment of pilot plants could serve as a nucleus for more development and investment by African NGOs.

3.7.4 Financial Arrangements

This could well be undertaken between NGOs with the active encouragement and support by UNIDO. Cooperatives offer a good channel for tapping this resource. In practice, UNIDO could give the certification of the technical viability of projects, while developed country NGOs could offer the elaboration required. Loans could then be given by cooperative financial institutions along with technical knowhow and guarantees in the form of export credit. The developing country NGOs could then execute the project with confidence and back up. As already mentioned, plants in many developing countries require rehabilitation. This is expensive, so capable developing country NGOs with the encouragement of UNIDO could finance such an exercise.

3.7.5 Training Arrangements

These offer welcome collaboration. The recepients could be food production and processing institutions and could contain related training espects as well as technical, financial and management fields. UNIDO could easily participate in fields within her charter and commitment to member governments. Some training could take place within national boundaries but could also include exchange programmes at the international level.

Assistance for national institutional development by UNIDO and able NGOs would go a long way towards creating local capability and a degree of self reliance.

3.8 ENVIRONMENTAL CONSIDERATIONS

Development of the agro-industrial sector from production to processing is likely to use inputs which affect the environment and capable of producing pollution if not properly handled.

The production of crops such as cereals, legumes, fruits and vegetables, and plantation crops such as coffee, tea, cocoa and sugar, to mention just a few, require, extensive and intensive use of land including clearing of forests. Proper land use to maintain soil fertility, and minimise soil erosion and desertification is of paramount importance. Proper crop rotation would obviously be a big advantage. Crop husbandry necessitates the use of herbicides in large farms with limited labour and plant protection chemicals such as pesticides. Some of these leave residues in the soil and crops and when the food stuffs are processed and eaten, some pesticides like DDT tend to accummulate in the body and cause harmful side effects. Some of the pesticides in use are toxic to man and animals and where the careless have handled them, cases of fatal poisoning have occured, though such statistics are hard to comeby.

Livestock rearing in traditional Africa is widespread and where animals are regarded as a sign of wealth and a symbol of the status quo, offtake rates are often low and overgrazing is rampant. Goats in particular are disasterous as they tend to eat up everything that grows. As a result soil erosion is threatening to extend the size of deserts on the continent where overgrazing

occurs.

The indiscriminate use of antibiotics and other animal health drugs in large scale farming is slowly affecting human health as residues in the animals tend to be passed on to humans through the meat or milk. This creates resistance to pathogens dangerous to human health.

Storage of crops often involves the use of insecticides or roodepticides so as to minimize losses. These chemicals pose a danger to the environment and humans if not properly used.

In processing foods, environmental considerations are almost commodity specific. Overall, they almost invariably produce by products and wastes which are at times discharged into the open environment or water bodies.

Often the source of power is important. Where industrial coal or oil is used for generating power, power plants belge dangerous acid fumes into the atmosphere and may create acid rain which has created much environmental damage in developed countries. Hydropower where available would alleviate the problem.

The source of water is another important consideration. Africa is rife with polluted water which requires extensive treatment to make it potable. Hygiene and sanitation which are prerequisites in food processing, need careful consideration. This coupled with potential pollution from agroindustrial plants, require careful management to avoid environmental pollution.

The atmosphere especially along the coast should be considered in the choice of equipment and machinery as corrosion poses a big problem necessitating the use of stainless steel units and antirust treatment.

The development of integrated agro-industries offers some solution to environmental preservation. For example in cereal milling, the bran could be used for oil extraction or making animal feeds instead of just dumping it away. Vegetable oil by products such as the cake could further be processed into high protein products or making livestock feeds. The husks could be burnt for fuel to generate power. The same would apply to vegetable and fruits products. These are just a few examples to illustrate the point of integrated development.

3.9.0 QUALITY AND AVAILABILITY OF HUMAN RESOURCES FOR AGRO-INDUSTRIES

The quality and availability of human resources for the agro-industry in Africa requires much improvement and training along the lines already described in this paper.

Availability of human resources is high in the form of mainly peasant farmers who form about 90% of the African rural population estimated at over 5 hundred million (3). The age distribution of the total population indicates that about 50% is below 20 years while the aged are well over 25%, thus leaving only a medium percentage for active agroindustrial undertaking especially where migration into towns by youngmen has left rural villages with children and the aged. This may pose a labour shortage where labour intensive industries are established.

Education is a good indicator of quality. Overall, the level of formal education of the African population is still very low by western standards. On te otherhand, most rural populations have rich traditional education endowed with age old skills related to their needs and environments. It is this kind of education and experience which has enable local populations to survive against odds under very challenging conditions.

In the meantime, literacy is still low, while the level of knowledge in integrated agroindustry by western standards leveas much to be desired. The deficit for the time being is offset by traditional processing of a variety of products based on local staples such as cereals, legumes and root crops. western knowhow.

3.9.1 Improvement and Training Considerations

Relevant and potential areas of cooperation and support have already been pointed out in this paper. The following are most promising in the African situation. Raising the literacy level of the population, will give more access to knowledge and technology. Adult education as functional literacy will teach practical skills that could be put into immediate use in agro-industrial development. Apprenticeships among NGOs members along with on the job training offer much scope for success. This will necessitate establishing or improving infrastructure such as training institutions and personnel. Provision of communication aids such as radios and visual aids will reach remote inaccessible rural areas and thus contribute towards agro-industrial development.

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